



PERFORMANCE OF SOIL STABILIZATION AGENTS

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By

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RESEARCH

Introduction

Poor subgrade soil conditions can result in inadequate pavement support and reduce pavement life. Soils may be improved through the addition of chemical or cementitious additives. These chemical additives range from waste products to manufactured materials and include lime, Class C fly ash, Portland cement and proprietary chemical stabilizers. These additives can be used with a variety of soils to help improve their native engineering properties. The effectiveness of these additives depends on the soil treated and the amount of additive used.

Project Objective

This report contains a summary of the performance of lime, cement, Class C fly ash, and Permazyme 11-X used with a wide range of soils. Each of the chemical additives tested is designed to combine with the soil to improve the texture, increase strength and reduce swell characteristics. These products were combined with a total eight different soils with classifications of CH, CL, ML, SM, and SP.

Project Description

Durability testing procedures included freeze-thaw, wet-dry, and leach testing. Atterberg limits and strength tests were also conducted before and after selected durability tests. Changes in pH were monitored during leaching. Relative values of soil stiffness were also tracked over a 28-day curing period using the soil stiffness gauge.

Project Results

Lime and cement stabilized soils showed the most improvement in soil performance for multiple soils, with fly ash treated soils showing substantial improvement. The results showed that for many soils more than one stabilization option may be effective for the construction of durable subgrades. The enzymatic stabilizer did not perform as well as the other stabilization alternatives.

Report Information

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